



# Captain wonder analysis (biochemistry;cellular respiration)

Molecular Genetics I (University of Western Australia)



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## *Captain Wonder Abilities and Release States*

Epithets/codenamed:

- Big boss
- Dracula
- Son of a dragon

Ethnicity: Chinese, British

Race: Human → vampire

Birth: 2040AD China

Rebirth: 3058AD US age:18

Personality:

Description:

Frozen for 1000 years in ice in 2051-3051AD, later injected with concentrated cellar man *phosphosomes/teins*

Abilities:

Thin layer solid state Powers (Earth and salivary glycolysis Form)/ vaporising state (wolf): IN the brain(cytosol), the ventricles and atria are diastolic, restriction level 3. Qualitive interphase

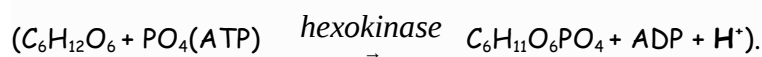
First stage of labour

- contractions of uterus
- dilation of cervix
- Salivary amylase (Starch into maltose) - immature follicle surrounded by single layer of tall, supporting granulosa cells
- the DNA replicates.
- cell grows to 10cm
- novel proteins are synthesized,
- cell organelles are replaced.
- mobile phase:
  - solvent may be organic or water mixture.
- Stationary phase:
  - water molecules bound to cellulose fibres of high-quality absorbent paper,
  - thin layer of fine and polar powdered solid, alumina (aluminium oxide) or silica( $\text{SiO}_2$ ) on a glass or plastic plate.
- Basis :
  - Solvent moves over stationary phase by capillary action, components adsorb onto stationary phase and desorb into mobile phase at different rates
- Ice coating/armour
- (Chan Tao Lu): martial arts granting the user the power to harness and tunnel
  1. (P.ConVol.tub)Ions: atom  $\pm$  electron, no elastic fibres → 60 -70% of  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ ,  $\text{HCO}_3^-$  by active; 100% amino acids & glucose by active; 60-70% water via osmosis
  2. (LOH)proteons (proton + protein): → 25%  $\text{Na}^+$  active, 25% water osmosis
  3. (D.ConVol.tub)electrons:  $e^-$  → ~5%  $\text{Na}^+$  active, ~5% osmosis or active
- elemental powers: fire, water, earth, and air.

## Captain Wonder Abilities and Release States

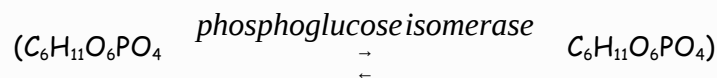
- as well as the ability to transform their body shape via star energy (mainly the sun)
  - star arm,
  - star hand,
  - star finger
- strength - pierces steel with hands with no effort and ease
- Speed - 6 punches/300-400milliseconds = 16punches/second,  $10^5$  m/s
- reflexes and agility
- 180 IQ, can memorise up to 20,000 words in one read
- Glycolysis oxidation of glucose allows change to level 2
- "Transcribing/investing ATP into restriction system":  $C_6H_{12}O_6 + 2PO_4(ATP) \rightarrow 2H(O)CCH(OH)CH_2OPO_3$ .

1. Phosphorylation: Via hexokinase, phosphate group is transferred from ATP to **glucose**, making glucose-6-phosphate:

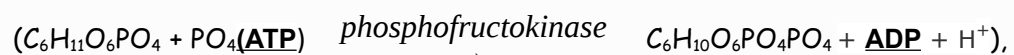


Glucose-6-phosphate is more reactive than glucose, and the addition of the phosphate also traps glucose inside the cell since glucose with a phosphate can't readily cross the membrane.

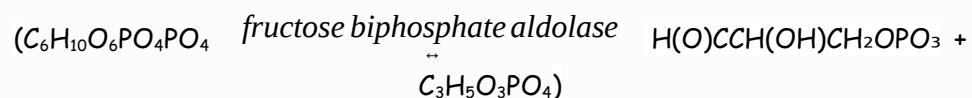
2. Isomerization: Via phosphoglucose isomerase, **Glucose-6-phosphate** is converted into fructose-6-phosphate.



3. 2<sup>nd</sup> Phosphorylation: Via phosphofructokinase, can be regulated to speed up or slow down the glycolysis pathway, **fructose-6-phosphate** is added a 2<sup>nd</sup> phosphate from ATP forming fructose-1,6-biphosphate:



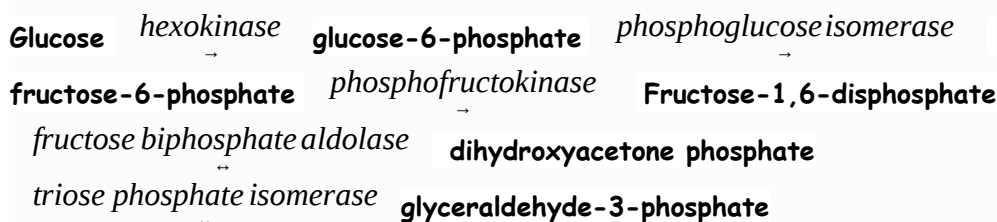
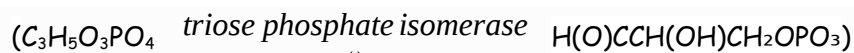
4. Cleavage: Via fructose biphosphate aldolase, **Fructose-1,6-bisphosphate** fissures to form daughter isomers with haploid numbers, dihydroxyacetone phosphate (DHAP) and glyceraldehyde-3-phosphate:



They are isomers of each other, but only one glyceraldehyde-3-phosphate can be worthy enough to directly continue through the next steps of glycolysis.

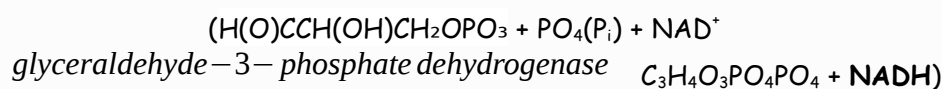
5. Dihydroxyacetone phosphate converts to glyceraldehyde-3-phosphate : Via triose phosphate isomerase. The equilibrium is "pulled" towards **glyceraldehyde-3-phosphate**, losing electrons. Thus, all of the DHAP is eventually converted:

## Captain Wonder Abilities and Release States

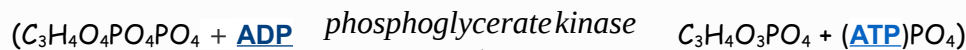


- "Translating/releasing ATP out of restriction system":  $(2H(O)CCH(OH)CH_2OPO_3 \rightarrow C_3H_4O_3 + 4(ATP)PO_4)$

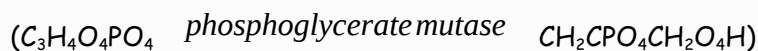
6. Oxidation: Via glyceraldehyde-3-phosphate dehydrogenase, glyceraldehyde-3-phosphate loses electrons, the overall reaction is exergonic, releasing energy that is then used to phosphorylate the molecule, forming **1,3 diphosphoglycerate**:



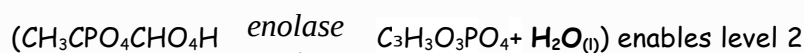
7. Dephosphorylation: Via phosphoglycerate kinase, 1,3-bisphosphoglycerate donates one of its phosphate groups to ADP, making a molecule of ATP and turning into **3-phosphoglycerate** in the process.



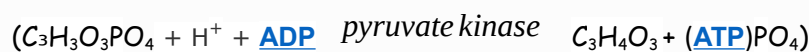
8. Phosphate transfer: Via phosphoglycerate mutase, 3-phosphoglycerate is converted into one of its isomers **2-Phosphoglycerate**:



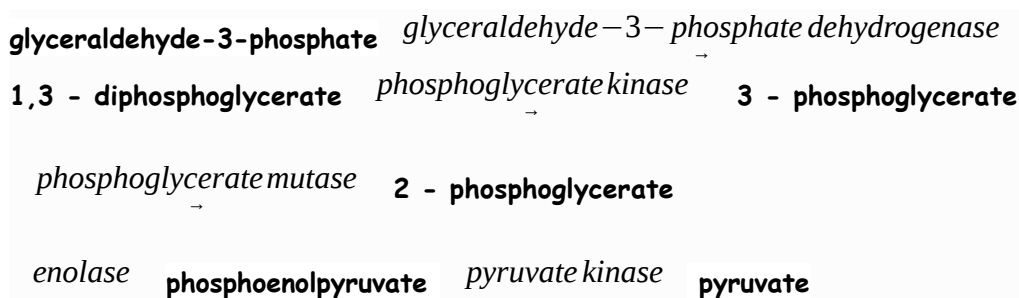
9. Dehydration: Via enolase, 2-Phosphoglycerate loses a molecule of water becoming **Phosphoenolpyruvate (PEP)**, primed to lose phosphate group in the final step



10. 2<sup>nd</sup> Dephosphorylation: Via pyruvate kinase, PEP finally donates the phosphate group to ADP. Making a second molecule of ATP. In the process, **pyruvate** is formed:



## Captain Wonder Abilities and Release States



- $\therefore \text{C}_6\text{H}_{12}\text{O}_{6(s)} + 2 \text{NAD}^+ + 2\text{H}^+ + 2\text{e}^- \xrightarrow{\text{glycolysis}} 2 \text{H}_3\text{C} (\text{C}=\text{O}) (\text{C}=\text{O})\text{OH}/\text{C}_3\text{H}_4\text{O}_{3(l)} + 2 \text{ATP} + 2 \text{NADH} + 2 \text{H}_2\text{O}_{(l)}$
- and anaerobic respiration in the cytosol (2ATP) and enables level 2
  - $(\text{C}_6\text{H}_{12}\text{O}_6 + \text{PO}_4(\text{ATP}) \xrightarrow{\text{hexokinase}} \text{C}_6\text{H}_{11}\text{O}_6\text{PO}_4 + \text{ADP} + \text{H}^+)$
  - $(\text{C}_6\text{H}_{11}\text{O}_6\text{PO}_4 \xrightarrow{\text{phosphoglucose isomerase}} \text{C}_6\text{H}_{11}\text{O}_6\text{PO}_4)$
  - $(\text{C}_6\text{H}_{11}\text{O}_6\text{PO}_4 + \text{PO}_4(\text{ATP}) \xrightarrow{\text{phosphofructokinase}} \text{C}_6\text{H}_{10}\text{O}_6\text{PO}_4\text{PO}_4 + \text{ADP} + \text{H}^+),$
  - $(\text{C}_6\text{H}_{10}\text{O}_6\text{PO}_4\text{PO}_4 \xrightarrow{\text{fructose biphosphate aldolase}} \text{H}(\text{O})\text{CCH}(\text{OH})\text{CH}_2\text{OPO}_3 + \text{C}_3\text{H}_5\text{O}_3\text{PO}_4)$
  - $(\text{C}_3\text{H}_5\text{O}_3\text{PO}_4 \xrightarrow{\text{triose phosphate isomerase}} \text{H}(\text{O})\text{CCH}(\text{OH})\text{CH}_2\text{OPO}_3)$
  - $(\text{H}(\text{O})\text{CCH}(\text{OH})\text{CH}_2\text{OPO}_3 + \text{PO}_4(\text{P}_i) + \text{NAD}^+ \xrightarrow{\text{glyceraldehyde-3-phosphate dehydrogenase}} \text{C}_3\text{H}_4\text{O}_3\text{PO}_4\text{PO}_4 + \text{NADH})$
  - $(\text{C}_3\text{H}_4\text{O}_4\text{PO}_4\text{PO}_4 + \text{ADP} \xrightarrow{\text{phosphoglycerate kinase}} \text{C}_3\text{H}_4\text{O}_3\text{PO}_4 + (\text{ATP})\text{PO}_4)$
  - $(\text{C}_3\text{H}_4\text{O}_4\text{PO}_4 \xrightarrow{\text{phosphoglycerate mutase}} \text{CH}_2\text{CPO}_4\text{CH}_2\text{O}_4\text{H})$
  - $(\text{CH}_3\text{CPO}_4\text{CHO}_4\text{H} \xrightarrow{\text{enolase}} \text{C}_3\text{H}_3\text{O}_3\text{PO}_4 + \text{H}_2\text{O}_{(l)})$  enables level 2
  - $(\text{C}_3\text{H}_3\text{O}_3\text{PO}_4 + \text{H}^+ + \text{ADP} \xrightarrow{\text{pyruvate kinase}} \text{C}_3\text{H}_4\text{O}_3 + (\text{ATP})\text{PO}_4)$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_5\text{H}_{12}\text{O}_{5(l)} + \text{CO}_{(l)}),$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_5\text{H}_{12}\text{O}_{4(l)} + \text{CO}_{2(l)}),$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_5\text{H}_{12}\text{O}_{3(l)} + \text{CO}_{3(l)}),$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_3\text{H}_4\text{O}_{3(l)} + \text{C}_3\text{H}_{2(l)} + \text{O}_{3(l)} + 6\text{H}^+_{(l)}) / (\text{C}_6\text{H}_{12}\text{O}_{6(s)} + 6 \text{NAD}^+ + 12\text{e}^- \rightarrow \text{C}_3\text{H}_4\text{O}_{3(l)} + \text{C}_3\text{H}_{2(l)} + \text{O}_{3(l)} + 6\text{NADH}_{(l)})$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_3\text{H}_2\text{O}_{3(l)} + \text{C}_3\text{H}_{2(l)} + \text{O}_{3(l)} + 8\text{H}^+_{(l)}),$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_3\text{H}_4\text{O}_{3(l)} + \text{C}_3\text{H}_{8(l)} + \text{O}_{3(l)})$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow \text{C}_3\text{H}_4\text{O}_{3(l)} + \text{C}_2\text{H}_2/\text{HC} \equiv \text{CH}_{(l)} + \text{CO}_{3(l)} + 6\text{H}^+_{(l)})$
- $(\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow 2\text{C}_3\text{H}_4\text{O}_{3(l)} + 4\text{H}^+_{(l)}),$

## Captain Wonder Abilities and Release States

- $(C_6H_{12}O_{6(s)} \rightarrow C_6H_{12(l)} + 3O_{2(l)}),$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_{4(l)} + C_5O_{6(l)}),$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_{4(l)} + C_5O_{5(l)} + O_{(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_{4(l)} + C_5O_{4(l)} + O_{2(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_{4(l)} + C_4O_{5(l)} + CO_{(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_{4(l)} + C_3O_{5(l)} + CO_{2(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow CH_4O/CH_3OH_{(l)} + C_5O_{5(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow C_3H_4O_{3(l)} + C_2H_4/H_2C=CH_2(l) + CO_{3(l)} + 4H^+_{(l)})$
- $(C_6H_{12}O_{6(s)} \rightarrow C_6H_8O_{5(l)} + H_2O_{(l)})$
- $(C_6H_{12}O_{6(s)} + PO_{4(l)} \rightarrow C_6H_{12(l)} + 5O_2 + P)$
- $(C_6H_{12}O_{6(s)} + PO_{4(l)} \rightarrow C_6H_{12(l)} + 10O_{(l)} + P)$
- $(C_6H_{12}O_{6(s)} + PO_{4(l)} \rightarrow C_6H_{12(l)} + PO_{10(l)})$
- $(C_6H_{12}O_{6(s)} + PO_{4(l)} \rightarrow C_6H_{12}O_{10(l)} + P_{(l)})$

Weakness: Exposure to liquids (until liquid state), gas, plasma, or light

After the dark island arc:

- ocular power - mind control people via eye contact and magnify and see many things humans can't see (mass spectroscopic and atom absorption and emission spectroscopic, acquired after the dark island arc)
- *endernetics* in prosthetic left arm - laser cannon, teleportation, *telekinesis*, *light saber claws* obtained after losing his arm at the age of 18 from Alpha

High performance liquid state (Water and stomach Form)/ pyruvate ionisation state (tiger): in the spine(mitochondrion), 虽然 the nuclear membrane begins to break down. だから Chromatin →(condenses)→ Chromosomes coil to become EXTRA visible. Chromosomes are made of two chromatids joined at the centromere, restriction level 2 (一边 Centrioles migrate to poles to pole dance, 一边 Spindle fibres emerge from the centrioles leash to each chromosome.

)!!!!: prophase

- Meiosis:
  - 1<sup>st</sup>: the DNA coils and individual chromosomes become visible. Genetic material is exchanged between chromosomes during crossing legs over.
  - 2<sup>nd</sup>: spindle fibres form and leash to each of the chromatids.
- Normal:
  - Mobile: NON-POLAR solvent (hexane) is pumped through machine with high pressure to carry sample.
  - Stationary: A finely divided powdered POLAR solid e.g  $SiO_{2(s)}$ (extremely small, allowing better separation) tightly packed in the short column.
- Reverse:
  - Mobile: POLAR solvent (water - methanol or water - acetonitrile mixes) pumped through machine in high pressure to carry sample.
  - Stationary: NON-polar solid packed in short column
- Basis:
  - The POLAR the analyte is, the longer it takes to LEAVE (elute) the column, the GREATER its  $R_f$ .
- As captain wonder melts, his crystal structure breaks. The molecules become less organised and messy randomly arranged -rather than in a crystal structure, so they can

## Captain Wonder Abilities and Release States

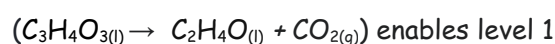
get closer and succ, more densely packed, less space/volume, contract  $\therefore$  increasing density ( $\rightarrow <-$ )

- 因为 C.W has 2l.p & 2O-H bonds, it can form greater n of H bonds with friends and family  $\therefore$  needing more E to cut into bonds  $\therefore$  higher B.P.
- $H^+_{(aq)} + Cl^-_{(aq)}$  activates gastric protease, mucus lubricates, gastric protease (protein  $\rightarrow$  polypeptides) - maturing ovarian follicle surrounded by  $\times 2$  layers of tall, supporting granulosa cells.
- Pumps sodium and potassium around the body
- Known to absorb and dissolve souls, can be ionic, to conduct electricity
- *hato bīto hīto!* (ion red overstealer) - powerful barrage of star energy punches
- doubled speed: can dodge bullets due to this.
- Employs ocular power in both eyes

Second stage of labour

- amniotic sac ruptures releasing level 2
- baby turns to face mother's back
- Uterus contractions increase in frequency and strength forcing the foetus down and out the birth canal
- Uses his blood (lavae) as a weapon, was seen secreting a blood-like substance (amniotic fluid) akin to magma that was seen melting metal
- *Infrared overdoraibu*
- Hydrophilic and absorbs water from the air's moisture
- Pyruvate ionisation:

1. A carboxyl group is snipped from pyruvate and released as a molecule of carbon dioxide, leaving behind a two-carbon molecule, hydroxyethyl, which binds to pyruvate dehydrogenase.



2. The two-carbon molecule is then oxidized, **bombarded** by the *stream of electrons*, the collision **will knock two electrons from the** hydroxyethyl and the electrons lost in the oxidation are picked up by **NAD<sup>+</sup>** to form **NADH**. ( $C_2H_4O_{(l)} \rightarrow C_2H_3O^{2+}_{(g)} + H(H^+ + 2e^-_{(g)})$ ), ( $NAD^+ + H(2e^- + H^+) \rightarrow NADH$ )

3. The oxidized two-carbon molecule—an **acetyl** group, attaches to Coenzyme A (CoA), an organic molecule derived from vitamin B5, to form acetyl CoA. **Acetyl CoA** is a carrier molecule, carrying the acetyl group to the Pankreabic's Cycle to be oxidised: ( $C_2H_3O^{2+}_{(g)} + CoA_{(g)} \rightarrow C_2H_3O^{2+}-CoA_{(g)}$ )

## Captain Wonder Abilities and Release States

- $\therefore 2 \text{ Pyruvate}(\text{C}_3\text{H}_4\text{O}_3) + 2 \text{ NAD}^+ + 2 \text{ CoA} \xrightarrow{\text{Pyruvate ionisation}} 2 \text{ Acetyl-CoA}(\text{C}_2\text{H}_3\text{O}^{2+}-\text{CoA}) + 2 \text{ NADH} + 2 \text{ CO}_{2(g)}$
- Body sweats and puts on water on skin. Water evaporates by needing large quanta energy to change.
- $(2\text{C}_3\text{H}_4\text{O}_{3(l)} + 2\text{H}_2\text{O}_{(l)} \rightarrow \text{C}_5\text{H}_{12}\text{O}_{6(g)} + \text{CO}_{2(g)}),$
- $(2\text{C}_3\text{H}_4\text{O}_{3(l)} + 2\text{H}_2\text{O}_{(l)} \rightarrow \text{C}_6\text{H}_{12}\text{O}_{6(g)} + \text{O}_{2(g)}),$
- $(2\text{CO}_{(l)} + \text{O}_{2(g)} \rightarrow 2\text{CO}_{2(g)})$  enables level 1
- Hydrolysis of ethene to ethanol  $(\text{C}_2\text{H}_4/\text{H}_2\text{C}=\text{CH}_{2(l)} + \text{H}_2\text{O}_{(l)} \rightarrow \text{C}_2\text{H}_6\text{O}/\text{C}_2\text{H}_5\text{OH}_{(l)})$
- Enchanted hydrokinesis and hydrobic respiration
  - $\text{H}_{2(l)} + \text{O}_{(l)} \rightarrow \text{H}_2\text{O}_{(g)}$
  - $2\text{H}_{2(l)} + \text{O}_{2(l)} \rightarrow 2\text{H}_2\text{O}_{(g)}$
- $\text{O}_{(l)} + \text{O}_{(l)} \rightarrow \text{O}_{2(g)}$  makes his own oxygen to breathe
- Weakness: Exposure to gas(until gas state), plasma, or light

Gas state (Air, pankreatic cycle, and Fire, intestine transport chain form)/ acceleration state (demon): in the abdomen/solar plexus/3<sup>rd</sup> eye (2<sup>nd</sup> mitochondrion), temporary endocrine organ. 虽然, the chromosomes are moved to/lined down the middle (equator) of the cell in single file by the spindle fibres. だが, each sister chromatid is attached to a spindle fibre originating from the centrioles located at opposite poles.(一边 deoxy blood goes from the right ventricle to the pulmonary artery 一边 oxy blood goes from left ventricle to aorta) blows mRNA and tRNA brings amino acid into his ribosome and builds to polypeptide chain: Restriction level 1 metaphase:

- 3<sup>rd</sup> eye(第三的眼/第三の目/demon eye) due to not enough eyes for 3<sup>rd</sup> ocular power: contain highly folded inner membrane(crista) that hold key respiratory proteins (including the enzyme that makes ATP) over large surface area



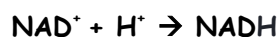
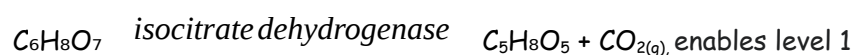
- Meiosis:
  - 1<sup>st</sup>: 1 × pair of recombined homologous chromosomes pair up at the equator, these can go either pole, random assortment, creating variation
  - 2<sup>nd</sup>: the single chromosomes line up along the equator of the cell (not in homologous pairs).
- Mobile phase:
  - Inert gas such as N<sub>2</sub>, CO<sub>2</sub> or He
- Stationary phase:
  - HighB.PNon-Volatile but Viscous(thick)Liquid coated(adsorbed) onto solid particles such as silica(SiO<sub>2</sub>), liquid coated solid particles are packed in Long thin column.
- Basis:



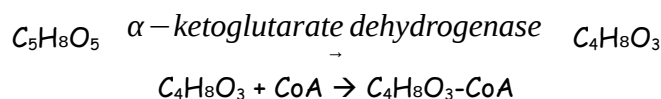
## Captain Wonder Abilities and Release States

- (Low tendency to evaporate), Strong intermolecular force (H<sup>+</sup> B.P and M.P) or THICC molecular mass → L v tendency to remain in the mobile gas phase → L v slowly exiting (eluting) the column → High R<sub>f</sub>
- Pankreabs: oxidation of acetyl groups in the citric acid cycle includes four steps in which electrons are abstracted.
  - Amylase(/maltase) (acetyl CoA + oxaloacetate → citrate + CoA) → (Citrate → isocitrate)
    - (acetyl CoA) joins a four-carbon molecule (**oxaloacetate**) releasing the CoA whilst forming a six-carbon molecule called (citrate).  

$$C_2H_3O^{2+}-CoA_{(g)} + C_4H_4O_5 \rightarrow C_6H_8O_7 + CoA$$
    - (**Citrate**) is converted into its isomer, (isocitrate). This is actually a two-step process, involving first the removal and then the addition of a water molecule.  $C_6H_8O_7 \rightarrow C_6H_8O_7$
  - Pro., (trypsin/chymotrypsin) (polypeptides → fuk'n DIEptides).
    - **Isocitrate** is oxidized and releases a molecule of carbon dioxide, leaving behind a five-carbon molecule—α-ketoglutarate. During this step, **NAD<sup>+</sup>** is reduced to **NADH**. The enzyme catalysing this step, **isocitrate dehydrogenase**, is important in regulating the speed of the citric acid cycle:



- **α-ketoglutarate** that's oxidized, reducing **NAD<sup>+</sup>** to **NADH**, and releasing a molecule of carbon dioxide in the process. The remaining four-carbon molecule picks up Coenzyme A, forming the unstable compound succinyl CoA. **α-ketoglutarate dehydrogenase** is important in regulation of the citric acid cycle:

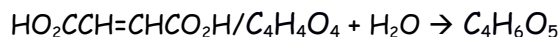


- break lipitards → fat acid & glycerol
  - the CoA of **succinyl CoA** is replaced by a phosphate group, which is then added to ADP to make ATP. In some cells, GDP—guanosine diphosphate—is used instead of ADP, forming GTP, guanosine triphosphate—as a product. The four-carbon molecule produced in this step is called succinate.  

$$C_4H_8O_3-CoA \rightarrow C_4H_8O_3 + CoA$$
  - **succinate** is oxidized, forming another four-carbon molecule called fumarate (HO<sub>2</sub>CCH=CHCO<sub>2</sub>H/C<sub>4</sub>H<sub>4</sub>O<sub>4</sub>). In this reaction, two hydrogen atoms—with their electrons—are transferred to FAD, producing FADH<sub>2</sub>. The enzyme that carries out this step is embedded in the inner membrane of the mitochondrion, so FADH<sub>2</sub> can transfer its electrons directly into the electron transport chain:  

$$C_4H_8O_3 \rightarrow C_4H_4O_4 + 4H^+$$
- nucleases, DNA & RNA.
  - Water is added to the four-carbon molecule **fumarate** (HO<sub>2</sub>CCH=CHCO<sub>2</sub>H), converting it into another four-carbon molecule called **malate**:

## Captain Wonder Abilities and Release States



- **oxaloacetate**—the starting four-carbon compound—is regenerated by oxidation of malate. Another molecule of  $\text{NAD}^+$  is reduced to  $\text{NADH}$  in the manner.  $\text{C}_4\text{H}_6\text{O}_5 \rightarrow \text{C}_4\text{H}_4\text{O}_5 + 2\text{H}^+$
- **2 Acetyl-S-CoA + 8 oxidized coenzymes [6  $\text{NAD}^+$  + 2  $\text{FAD}$ ] + 2 ADP + 2 Phosphate  $\rightarrow$  4  $\text{CO}_2$  + 2 ATP + 2 CoA-SH + 8 reduced coenzymes [6  $\text{NADH}$  + 2  $\text{FADH}_2$ ]**
- **/or/ 2 Acetyl-CoA + 6  $\text{NAD}^+$  + 2 Q + 2 GDP + 2  $\text{P}_i$  + 4  $\text{H}_2\text{O}$   $\rightarrow$  2 CoA-SH + 6  $\text{NADH}$  + 6  $\text{H}^+$  + 2  $\text{QH}_2$  + 2 GTP + 4  $\text{CO}_2$**
- Intestine transport(violet) chain:
  1. Peptidase/oestrogen, where  $\text{DIEp}$  and peptides  $\rightarrow$  amino acids
  2. Amylase/progesterone(maltase) (maltose  $\rightarrow$  glucose)
- **2  $\text{NADH}$  +  $\text{O}_2$  + 2 $\text{H}^+$  + 2ADP + 2 $\text{P}_i$   $\rightarrow$  2 $\text{NAD}^+$  + 2ATP + 2 $\text{H}_2\text{O}_{(g)}$**
- Similar in appearance to the secondary follicle, larger and more fluid, near surface of ovary ready for ovulation
- proton gradient
- release of ovum from follicle in ovary(ovulation)
- The  $\dot{x}$  of all captain wonder's particles'  $E_k$  is proportional to its T
- can travel rapidly in a random straight-line motion, colliding with each other and the container wall while total  $E_k$  stays the same, transferring  $E_k$  from one particle to another particle.
- The  $V_t$  occupied by the particles does not exist compared to the d between the particles
- The intermolecular F between particles in a sample of gas is useless
- Boil's law: the volume of a gas is inversely proportional to its pressure:
 
$$V \propto \frac{1}{P}$$

$$P_1 V_1 = P_2 V_2$$

If Volume  $\times 0.5$  then Pressure  $\times 2$
- Charles' law: volume of gas is proportional to the absolute temperature:
 
$$V \propto T$$

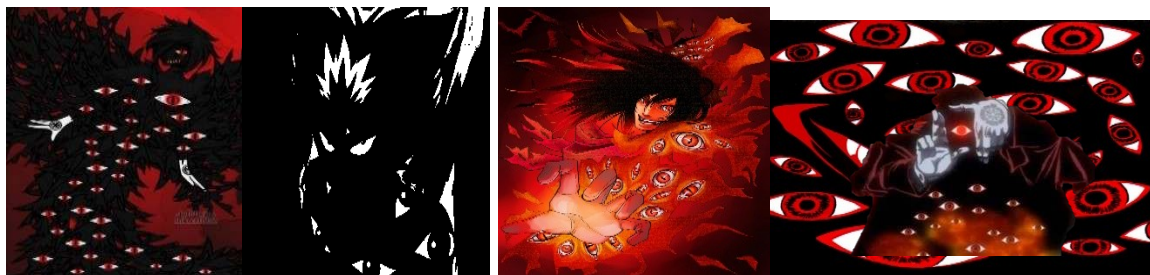
$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$
- Avogadro's law: the volume occupied by a gas depends directly on the amount of gas(in mol) present. Equal volumes of gases contain same number of atoms/molecules:
 
$$n = V/V_M \quad \text{where } V_M = 22.71\text{L}$$
- Enhanced strength
- Create tornadoes with his sexy body
- Respiration:
  1. Enchanted pyrobic respiration ( $\text{CH}_4 + 2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{CO}_2$ )
  2. and incomplete aerobic respiration in the 1<sup>st</sup> mitochondria (36ATP) ( $\text{C}_6\text{H}_{12}\text{O}_{6(l)} + 3\text{O}_{2(g)} \rightarrow 6\text{H}_2\text{O}_{(g)} + 6\text{CO}_{(g)}$ ) burning with orange sooty flame
  3. Complete aerobic respiration in the 2<sup>nd</sup> mitochondria ( $\text{C}_6\text{H}_{12}\text{O}_{6(g)} + 6\text{O}_{2(g)} \rightarrow 6\text{H}_2\text{O}_{(g)} + 6\text{CO}_{2(g)}$ ), burning with blue flame
  4.  $2\text{CO}_{(l)} + \text{O}_{2(g)} \rightarrow 2\text{CO}_{2(g)}$ , enables level 1

## Captain Wonder Abilities and Release States

Weakness: Exposure to plasma (until plasma state), or light

plasma state (spirit osmosis form)/deflection state (dragon): summons the electromagnetic radiation(ovum) and absorbs it: restriction level 0 anaphase

- $E_{cell} = E_{reduction} + E_{oxidation}$
- Mitosis:
  - The spindle fibres shorten(contract)
  - Chromosomes divide at centromere. Daughter chromatids move to opposite ends/poles by spindle fibres, drawing the chromatids of each chromosome to opposite ends of the cell.
- Meiosis:
  - 1<sup>st</sup>:
    - Spindle fibres heaves one chromosome from each recombined homologous pair to opposite poles,
    - each pole has a copy of each chromosome, now has  $\frac{1}{2}$  n. no pairs.
  - 2<sup>nd</sup>:
    - the spindle fibres contract and heave one chromatid from each single chromosome to opposite ends of the cell.
    - Sister chromatids are torn apart by spindle fibres and heaved to each side of the cell
- ultraviolet ovaraidu
- electron violet overstealer
- ATP synthase
- in menstrual cycle, corpus luteum secretes oestrogen & progesterone to develop the endometrium for fertilisation/multiple eyes
- eyes all over his body



- 9000 × physical speed and strength
- Connect with the souls and cells of dead rivals and use their techniques. With Musō Tensei, even when in a coma, the user can fight as just their soul or as a cell or as an atom.
- Army of cells and souls
- Proton-motive force
- Converse with his own cells and souls and manipulate their function at will.
- Can only be killed at the nuclear level(nucleus has to be split)

## *Captain Wonder Abilities and Release States*

Weakness: Exposure to light (until Quintessence-conden state)

Quintessence-conden state / Bose-Einstein condensates / detection and recognition state (budda/god): tele/telophase & cytokinesis: absorbs the soul of himself from an alternate dimension.

- **Mitosis:**
  - the chromosomes unleashed from the spindle fibres.
  - The nuclear membrane reappears around each set of chromosomes
  - chromosomes arrive at opposite poles and begin to unravel/uncoil
- **Meiosis:**
  - 1<sup>st</sup>:
    - Nuclear membrane reforms
  - 2<sup>nd</sup>:
    - the cell divides through forming 4 nuclei. The 4 nuclei contain half the number of chromosomes as the parent cell.
- **Degenerates:** formed 8-10days following ovulation if egg is not fertilized
- **Cytokinesis** - captain-wonder's cytoplasm splits, A deep furrow (indentation) forms and divides the cell into two separate daughter cells, cellular organelles and cytoplasm is shared between the two daughter cells.
- **Telekinesis**
- **Full of enlightenment**
- **Sutā yunibāsu** - controls the universe (the sun, planets, even asteroids)
- **Sutā yunibāsu, za purachina** (星际宇宙白金)
- **Universal healing**- cures cancer
- **Makes/deletes the laws of the universe**
- **Becomes budda/god**
- **Can bend the sun, moon, and light(photokinesis)**

Weapons:

starff

Sacred sais

Starchaku

Ender/endo sword

Nano blade

Star pistol

Star shotgun

Star rifle

## Captain Wonder Abilities and Release States

Starzooka

The sun

The moon

The universe

Defeated the cellar man with ass:

$$\sqrt{\frac{\sum (\dot{x}-\mu)^2}{n}} \quad \text{Angle } A = \cos^{-1} \left( \frac{b^2 + c^2 - a^2}{2bc} \right)$$

$$\text{Side } a = \sqrt{b^2 + c^2 - 2bc \cos(A)}$$

$$\text{Length} \times \text{length}$$

$$\text{Area} \times \text{length}^2$$

$$\text{Volume} \times \text{length}^3$$

$$T_n = a + (n-1)\Delta$$

$$T_n = a\Delta^{n-1}$$

$$ax^2 + bx + c = 0$$

$$\text{Voltage (V)} = \text{Current (A)} \times \text{Resistance } \textcircled{R}$$

$$S_n = \frac{a(1-r^n)}{(1-r)}$$

$$\sin^2(x) + \cos^2(x) = \frac{a^2 + b^2}{c^2} = 1$$

$$N^{\circ} \text{ atoms remaining} = N^{\circ} \text{ atoms originally} \left( \frac{1}{2} \right)^{\frac{\text{time passed}}{\text{half life}}}$$

$$\text{Heat energy (kJ)} = \text{Mass (kg)} \times (\text{Latent heat capacity})$$

$$\text{Heat energy (kJ)} = \text{Mass (kg)} \times (\text{Specific heat capacity}) \times (\Delta \in \text{temperature})$$

$$0.23 \times 10^{-2 \circ 0} = \textcolor{red}{i} \quad 0.0023$$

$$3 \times 10^8 \text{ m s}^{-1} = f\lambda$$

$$E(J) = 6.63 \times 10^{-34} \times f$$

$$anx^{n-1}$$

$$\frac{k_2}{k_1} = \frac{E_a}{8.314} \times \left( \frac{1}{T_1} - \frac{1}{T_2} \right)$$

## *Captain Wonder Abilities and Release States*

Quotes:

**“Goodness Gracious, Father Franklin  
Did Go By Picking Pumpkins, PrEParing Pies”**

*"That was a 70-inch... plasma screen TV...[sharp inhale]... so, how can I help you?"*

*"God does not help those who beg for mercy."*

*"My body smelts like iron, my blood boils like the sun!"*

*"Those who aren't ready to fail... are the ones doomed to fail!" - Captain wonder in his second state*